

Biological Sciences 124: Coastal Marine Research
Bodega Marine Lab – Summer 2008

Instructors:

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Overview:

This class will give you the opportunity to conduct independent research on a topic related to the concurrent oceanography courses. Based research interests, you will select one instructor to be your primary mentor, although integrative topics that draw on the expertise of multiple BML faculty members are encouraged. You will gain practical, hands-on experience in aspects of the scientific process including making observations, generating hypotheses, designing and conducting experiments, and analyzing data. You will also develop skills in writing manuscripts and delivering oral presentations to a scientific audience.

Reading:

There is no assigned text for this course. Rather, you are expected to read the primary literature to become an expert in your research topic. This background reading will be essential for designing an effective project and for placing your results in the broader context of previous research on your topic. In the first week, you will be trained in library research methods. Thereafter, you will conduct independent library searches for relevant and interesting journal articles as required by your project. Your mentor will also be available to assist you in identifying readings related to your work.

Grading:

This is a 3 unit, letter-graded course. You will be evaluated as follows:

- (1) Written research project proposal (10%) due **August 20**.
- (2) Careful implementation and successful completion of research (30%).
- (3) An expanded outline/first draft of a research paper (10%) due **September 3**.
- (4) A final written paper due by 10pm on **September 11** (30%).
- (5) A formal oral presentation on your research (20%) on **September 10**.

Schedule:

- *Monday, August 4*

9am: BML orientation.

- *Wednesday, August 6*

12pm: Library research training.

1pm: Introduction to this course and research methods.

- ***Wednesday, August 13***

1pm: Discussion of research topics – be prepared to orally outline your topic. Title of research topic (and 2 literature citations) to be submitted.

- *Friday, August 15*

9am: REU student presentations – to give you an idea of what's involved.

- *Monday, August 18*

Before this date, meet with your mentor to discuss your research plan.

- ***Wednesday, August 20***

Research proposal to be submitted (3 pages double-spaced, including 5 literature citations). This document should include:

(1) An introduction that *briefly* summarizes (a) the background for your project (what is known about your area of study, why is it interesting and/or important?), and (b) any preliminary observations that have inspired your project.

(2) A section listing the explicit hypotheses that you propose to test or clearly articulating the research question that you plan to study.

(3) A materials and methods section that outlines your study design (and how you will test your hypotheses).

(4) An expected results and significance section that outlines what results you expect to obtain and what these results would suggest.

(5) A literature cited section that lists the journal articles cited in your proposal.

Also, please provide a 4th page appendix in which you estimate your timeline and “budget”, i.e., what help and equipment you will need – so you have a realistic idea of what you need to arrange.

- *Wednesday, August 27*

1pm: Workshop on writing a scientific paper.

- ***Wednesday, September 3.***

An expanded outline/first draft of your paper is due. The Introduction and Methods sections should be complete. The Results and Discussion sections

may be abbreviated, but you should include as much detail as possible. The more complete the draft, the better feedback you will get.

- ***Thursday, September 11***

10pm: Final written paper due (10 double-spaced pages, not including figures).

- ***Wednesday, September 10***

9am: Student Symposium.

Present research results, using a PowerPoint presentation (12 minute presentation, 3 minutes for questions). This will be held in the lecture hall and will be your chance to share your results with peers, instructors, and other members of the BML community.

- ***Friday, September 12***

Clean-up. Everyone is required to participate – Thanks!

NOTE !! Throughout this 6-week period, instructors and TAs will be available for discussion and brainstorming about your project ideas. You should also interact with your fellow students – creativity works best when allowed free reign!